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**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Docket Number (Optional)  
059349.00014

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Name \_\_\_\_\_

Application Number:

10/743,299

Filed: December 23, 2003

First Named Inventor:

Takeo KANADE et al.

Art Unit: 2624

Examiner: Wesley J. TUCKER

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a Notice of Appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

I am the

Signature

- ☐ Applicant/Inventor.
- ☐ assignee of record of the entire interest.  
See 37 CFR 3.71. Statement under  
37 CFR 3.73(b) is enclosed (Form PTO/SB/96)

☒ Attorney or agent of record.  
Registration No. 61,180

Michael A. Leonard II  
Typed or printed name

(703) 720-7883  
Telephone number

☐ Attorney or agent acting under 37 CFR 1.34.  
Registration Number if acting under 37 CFR 1.34 \_\_\_\_\_

June 8, 2009  
Date

NOTE: Signatures of all of the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below\*.

☒ \*Total of 1 form is submitted.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Confirmation No.: 7865

Takeo KANADE et al.

Art Unit: 2624

Application No.: 10/743,299

Examiner: Wesley J. TUCKER

Filed: December 23, 2003

Attorney Dkt. No.: 059349.00014

For: POLYHEDRON RECOGNITION SYSTEM

**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

June 8, 2009

Sir:

Appellants hereby submit this Pre-Appeal Brief Request for Review of the final rejections of claims 1-15 in the above identified application. Claims 1-15 were finally rejected in the Office Action dated February 6, 2009.

**The Claims are Clearly not Anticipated by Haikawa under 35 U.S.C. § 102**

Appellants respectfully submit that the discussion in Haikawa greatly differs from the features recited in the independent claims. Accordingly, Appellants respectfully submit that the rejection is clearly deficient and that said rejection constitutes **clear error** in the Office Action.

***1) Haikawa Clearly Lacks any Region Selection Means***

Independent claim 1 recites, in part, “region selection means for selecting a predetermined region to be processed further for detailed analysis within the image photographed by the at least one camera”. Independent claims 8 and 15, which have their own scope, recite similar features. In the previous Response filed April 22, 2009, Appellants argued that while Haikawa discusses “calculating the visual field of the camera (vision sensor 32) at the estimated current position”, after which “shape feature points are screened” (see column 5, lines 47-53), it appears that this is performed to find shape feature points for a “whole object”. As such, Haikawa does not disclose that a predetermined region of the visual field of the camera is selected, as claimed. The Office Action stated on page 2 that “[w]hen Haikawa discloses

screening the shapes in an image to determine the candidate shape points, this is interpreted as a predetermined region. The region to be evaluated is determined from the screening of the image scene.” However, this is not how Haikawa operates.

Per the above, Haikawa discusses calculating the visual field of a camera and screening for shape feature points, not screening shapes in an image to determine candidate shape points, as the Office Action claims. As Appellants argued previously, Haikawa does not select a **predetermined region** for further processing. Rather, Haikawa appears to be concerned with listing “as many feature point candidates as are required for the ensuing processing for selection of the optimum shape feature points” (column 6, lines 1-3). This is apparently performed so a robot can recognize its own position from recognized shape feature points and assists the robot in planning a path in a map (see column 1, lines 7-15, of Haikawa). Haikawa determines the robot’s distance from the feature points and subsequently determines the robot’s current position in a map. As such, no “region” (of anything) is predetermined (*i.e.* determined in advance), as claimed.

The Advisory Action asserted on page 2 that “Examiner points to column7 [sic], lines 66-68 and Column 8, lines 1-10. Haikawa discloses that predefined evaluation functions are used to identify feature points. The predefined evaluation functions for recognizing shapes are interpreted as predetermined. The process of finding feature points and matching them to predefined evaluation functions reads broadly on the claimed features.” However, this interpretation is clearly incorrect.

The section of Haikawa cited in the Advisory Action discusses that “predefined evaluation functions are used to select from among these shape feature points those which are within a prescribed distance from the robot” (column 7, line 68, through column 8, line 3). It is not understood how a predefined (or “predetermined”, as alleged in the Advisory Action’s interpretation) evaluation function and shape feature points **derived** from an image, both of which are not a part of the original image, are interpreted to be equivalent to selecting a predetermined region of an image. Evaluation functions interpret data and shape feature points are stored in a different data structure than the image itself, referring to certain locations within the image. Rather, an image must be screened to find shapes and/or feature points **in the first place**, and as such, the corresponding feature points and the evaluation functions used to find

them are not “predetermined regions” of an image. Clearly, the robot does not initially know what shape feature points are present in an image. Selecting a region of an image clearly means selecting a subset of said image, and no such operation is present anywhere in Haikawa. While the Advisory Action alleged that the features of Haikawa read broadly on the claimed features, this interpretation is neither reasonable nor consistent with the interpretation that would be accorded by one of ordinary skill in the art in light of the present specification.

2) *Haikawa Clearly Fails to Disclose or Suggest Recognizing Polyhedron Shapes and a Set Candidate Range*

Independent claim 1 further recites “polyhedron shape recognition means for recognizing the shape of one or more polyhedrons based on the range image within a set candidate range.” Independent claims 8 and 15, which each have their own scope, recite similar features. The Office Action asserted on pages 2 and 4 that “Haikawa explicitly discloses that the polyhedron shapes or staircases are determined along with the range or distance to them (column 6, lines 9-23). This reads on recognizing polyhedrons in the candidate range. The range is interpreted to be a candidate range as it is determined from candidate points defining the object of interest or predetermined region.” However, Appellants respectfully submit that this argument is incorrect.

First, Haikawa does not appear to disclose or suggest that polyhedron shapes or staircases themselves are recognized in column 6, lines 9-23. Rather, shape feature points and the distances thereof from the robot are determined. These shape feature points appear to only be candidates for **portions** of shapes on a map and as such, are not shapes themselves. The Advisory Action alleged on page 2 that “the polyhedron shapes or staircases are determined along with the range or distance to them (column 6, lines 9-23).” However, the cited section of Haikawa merely discusses shape **feature points**, which are not shapes in and of themselves; a single shape has multiple feature points. While Haikawa discusses “a mobile robot which recognizes distinctive or characteristic shapes in its navigation environment which are suitable for a visual recognition algorithm and recognizes its own current position from the position of the recognized shapes”, actual shape recognition does not appear to be present, or necessary, in Haikawa. Determination of actual shapes from the feature points does not seem to be relevant to the robot’s operation. Haikawa only appears to be concerned with distances from shape feature

points for navigation purposes. On the other hand, independent claim 1 recites that the shape of one or more polyhedrons is recognized.

Second, nowhere does Haikawa discuss a set candidate range, as claimed. Rather than setting a candidate range for identifying, for instance, a potential staircase, Haikawa appears to determine feature points for an entire image. The Advisory Action alleged on page 2 that “[t]he range is interpreted to be a candidate range as it is determined from candidate points defining the object of interest or predetermined region.” Again, per the above, an object of interest itself is not a predetermined region since the image must be parsed and processed in order to even discover whether a shape is present. Something that must be discovered (*i.e.* determined) cannot rationally be said to be “predetermined”. Also, if an “object” is to be interpreted as a “shape”, no such shapes appear to be determined in Haikawa since it is not discussed that shape feature points are combined to determine the shape of which they are a part.

3) Haikawa Clearly Fails to Disclose or Suggest Obtaining a Range Image

Independent claim 1 also recites, in part, “processing region setting means for obtaining a range image from the image obtained by the at least one camera and for setting a processing region upon the obtained range image based on the selected region”. Independent claims 8 and 15, which have their own scope, recite similar features. On page 2, the Office Action asserted that “Haikawa discloses explicitly determining ‘the distance between the robot and each shape feature point.’ The distance between the feature points of the predetermined region and the robot is range directly determined by the image data.” While the Office Action is correct that Haikawa discusses calculating the distance between the robot and each shape feature point (see column 6, lines 15 and 16), this is not equivalent to obtaining a **range image**, as claimed. The present specification discusses that in some embodiments, a range image may be, for example, a “3D image; specifically table data that indicates range information” (see page 11, lines 16 and 17). Nothing corresponding to a range image is present in Haikawa.

The Advisory Action argued on page 2 that “Applicant alludes in the remarks that a range image may be a 3D image with a table indicating range data. Examiner points out that all that is claimed is a range image which will be given the broadest possible interpretation, in the present case, an image with corresponding range data.” Again, the incorrect standard has been applied for determining equivalence of features between the claims and the cited art. The “broadest

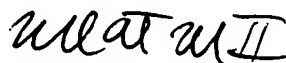
possible interpretation” is not the correct standard. As required by MPEP § 2111, the claims must be given their broadest **reasonable** interpretation **consistent with the specification**. The Federal Circuit elaborated on this standard by requiring that the broadest reasonable interpretation must be “in light of the specification as it would be interpreted by one of ordinary skill in the art” per *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). In this case, the Advisory Action has taken a position that is clearly at odds with the discussion of a range image in the present specification with respect to some embodiments of the present invention. No 3D image, table indicating range data, or any equivalent thereof is disclosed in Haikawa.

### **Conclusion**

For at least the reasons presented above, Appellants respectfully submit that all of the rejections in the Office Action are fraught with clear error and as such, should be reversed by this Panel.

Reconsideration and withdrawal of the rejections, in view of the clear errors in the Office Action, is respectfully requested. In the event this paper is not being timely filed, Appellants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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Michael A. Leonard II  
Attorney for Appellants  
Registration No. 60,180

**Customer No. 32294**  
SQUIRE, SANDERS & DEMPSEY LLP  
14<sup>TH</sup> Floor  
8000 Towers Crescent Drive  
Vienna, Virginia 22182-6212  
Telephone: 703-720-7800  
Fax: 703-720-7802  
MAL:skl:jf  
Enclosures: PTO/SB/33 Form  
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